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Alfred D. Ducharme

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FOLEY HOAG, LLP

PATENT GROUP, WORLD TRADE CENTER WEST

155 SEAPORT BLVD

BOSTON, MA 02110

EXAMINER

NEGRON, ISMAEL

ART UNIT

PAPER NUMBER

2875

DATE MAILED: 10/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/705,643

Applicant(s)

DUCHARME ET AL. 

Examiner

Ismael Negron

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-113 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 28-35 is/are allowed.
- 6) ☒ Claim(s) 1-20, 22-27, 36, 37, 39-64, 68-78, 80-98 and 102-113 is/are rejected.
- 7) ☒ Claim(s) 21, 38, 65-67, 79 and 99-101 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>8/15/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Interference

1. Applicant's withdrawal of the request for interference proceedings of the instant application with U.S. Pat. No. 6,683,423 (CUNNINGHAM) is acknowledged.

Response to Amendment

2. Applicant's amendment filed on June 20, 2005 has been entered. Claims 1-43 have been amended. No claim has been cancelled. Claims 44-113 have been added. Claims 1-113 are still pending in this application, with claims 1, 15, 28, 36, 41 and 80 being independent.

Title

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: **Apparatus for Simulating a Light Source Spectrum, and Method.**

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character “**104**” has been used to designate “*Planckian locus*” (page 2, line 21), “*line*” (page 2, line 24) and “*black body curve*” (page 28, line 18). In addition, note the following:

- reference character “**368**”, used to designate “*conductive sleeve*” (page 17, line 5) and “*conductive aluminum sleeve*” (page 18, line 6); and
- reference character “**378**”, used to designate “*enclosure plate*” (page 17, line 6) and “*disk-shaped enclosure plate*” (page 18, line 7).

The applicant is advised that the reference characters must be properly applied, with no single reference character being used for two different parts or for a given part and a modification of such part. See MPEP §608.01(g).

Applicant is further advised that this action only exemplifies the objections to the drawings, applicant’s cooperation is requested in correcting all the occurrences of the cited, or any other errors of which applicant may become aware in the specification.

5. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement

sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3, 5, 9, 15, 19, 20, 22 and 80 are rejected under 35 U.S.C. 102(b) as being anticipated by WILLIAMS (U.S. Pat. 2,686,866).

7. WILLIAMS discloses an illumination device having:

- **a plurality of light emitting devices (as recited in Claim 1),**
Figure 1, reference characters R and B;
- **the plurality of light emitting devices including at least one**
first light emitting device configured to emit a first radiation
having a first spectrum (as recited in Claim 1), Figure 1,
reference character R;

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- **the plurality of light emitting devices further including at least one second light emitting device configured to emit a second radiation having a second spectrum (as recited in Claim 1), Figure 1, reference character B;**
- **the second spectrum being different from the first spectrum (as recited in Claim 1), column 3, lines 36-44;**
- **a controller (as recited in Claim 1), column 1, line 34-36;**
- **the controller being configured to control the plurality of light emitting devices to produced a composite radiation (as recited in Claim 1), column 1, lines 34-36;**
- **the composite radiation having at least one resulting spectrum that simulates a desired spectrum corresponding to sample radiation from a predetermined light source (as recited in Claim 1), inherent;**
- **a first quantity of the first light emitting device being selected such that if the controller supplies a predetermined electrical power to the plurality of devices the resulting spectrum substantially simulates de desires spectrum (as recited in Claim 2), inherent;**
- **a second quantity of the second light emitting device being selected such that if the controller supplies a predetermined electrical power to the plurality of devices the resulting**

- spectrum substantially simulates de desires spectrum (as recited in Claim 2), inherent;**
- **a first quantity of the first light emitting device being selected such that if the controller supplies maximum electrical power to the plurality of devices the resulting spectrum substantially simulates de desires spectrum (as recited in Claim 3), inherent;**
 - **a second quantity of the second light emitting device being selected such that if the controller supplies maximum electrical power to the plurality of devices the resulting spectrum substantially simulates de desires spectrum (as recited in Claim 3), inherent;**
 - **the first quantity being different from the second quantity (as recited in Claim 5), column 3, lines 36-44;**
 - **an optical assembly for collecting the first and second radiation (as recited in Claim 9), Figure 1, reference characters 4 and 5;**
 - **the optical assembly projecting the composite radiation from the illumination device (as recited in Claim 9), as seen in Figure 1;**
 - **the composite radiation having at least one resulting spectrum including wavelengths only within a contiguous bandwidth of a predetermined target range when the controller supplied a**

- maximum electrical power to the light emitting devices (as recited in Claim 15), inherent;**
- **at least one spectrum having significant wavelength of less than about 600 nm when the controller supplies maximum electrical power to the light emitting devices (as recited in Claim 19), column 3, lines 36-44;**
 - **at least one spectrum having significant wavelength of less than about 550 nm when the controller supplies maximum electrical power to the light emitting devices (as recited in Claim 20), column 3, lines 36-44;**
 - **the plurality of light emitting devices including at least four light emitting devices (as recited in Claim 22), Figure 2, reference characters R, B, G and W; and**
 - **the at least four light emitting devices being configured to emit four different respective spectra (as recited in Claim 22), column 3, lines 36-44.**

8. Method Claim 80 was considered as inherently disclosed by the patented structure of WILLIAMS (as detailed above).

9. The applicant is advised that the use of phrases like “configure to” fail to positively limit the structure of the claimed invention, but only requires the ability to so perform. *In re Hutchinson*, 69 USPQ 138.

In addition, the phrase “simulates a desired spectrum corresponding to sample radiation generated by a predetermined light source” has no effective patentable weight as any combination of light sources would inherently produced a composite spectrum that would correspond to at least one of all the known light sources.

The applicant is even further advised that claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). In this case, the claims recite substantial functional limitations, such limitations carrying little or no patentable weight, as they refer to the intended use of the claimed device without affecting its structure.

10. Claims 1-3, 5, 8, 9, 15, 19, 20, 23 and 80 are rejected under 35 U.S.C. 102(b) as being anticipated by BOENNING et al. (U.S. Pat. 3,760,174).

11. BOENNING et al. discloses an illumination device having:

- **a plurality of light emitting devices (as recited in claims 1 and 15), Figure 2, reference characters 21, 24 and 25;**
- **the plurality of light emitting devices including at least one first light emitting device configured to emit a first radiation having a first spectrum (as recited in claims 1 and 15), Figure 2, reference character 21;**
- **the plurality of light emitting devices further including at least one second light emitting device configured to emit a second**

- radiation having a second spectrum (as recited in claims 1 and 15), Figure 2, reference character 24;**
- **the second spectrum being different from the first spectrum (as recited in claims 1 and 15), column 2, lines 14-17;**
 - **a controller (as recited in claims 1 and 15), Figure 2, reference characters 13 and 15 ;**
 - **the controller being configured to control the plurality of light emitting devices to produced a composite radiation (as recited in claims 1 and 15), column 2, lines 23-33;**
 - **the composite radiation having at least one resulting spectrum that simulates a desired spectrum corresponding to sample radiation from a predetermined light source (as recited in Claim 1), inherent;**
 - **a first quantity of the first light emitting device being selected such that if the controller supplies a predetermined electrical power to the plurality of devices the resulting spectrum substantially simulates de desires spectrum (as recited in Claim 2), inherent;**
 - **a second quantity of the second light emitting device being selected such that if the controller supplies a predetermined electrical power to the plurality of devices the resulting**

- spectrum substantially simulates de desires spectrum (as recited in Claim 2), inherent;**
- **a first quantity of the first light emitting device being selected such that if the controller supplies maximum electrical power to the plurality of devices the resulting spectrum substantially simulates de desires spectrum (as recited in Claim 3), inherent;**
 - **a second quantity of the second light emitting device being selected such that if the controller supplies maximum electrical power to the plurality of devices the resulting spectrum substantially simulates de desires spectrum (as recited in Claim 3), inherent;**
 - **the first quantity being different from the second quantity (as recited in Claim 5), column 2, lines 14-17;**
 - **the plurality of light emitting device including light emitting diodes (as recited in claims 8 and 23), Figure 1, reference characters 21, 24 and 25;**
 - **an optical assembly for collecting the first and second radiation (as recited in Claim 9), Figure 2, reference character 30;**
 - **the optical assembly projecting the composite radiation from the illumination device (as recited in Claim 9), as seen in Figure 1;**

- **the composite radiation having at least one resulting spectrum including wavelengths only within a contiguous bandwidth of a predetermined target range when the controller supplied a maximum electrical power to the light emitting devices (as recited in Claim 15), inherent;**
- **at least one spectrum having significant wavelength of less than about 600 nm when the controller supplies maximum electrical power to the light emitting devices (as recited in Claim 19), column 2, lines 14-17; and**
- **at least one spectrum having significant wavelength of less than about 550 nm when the controller supplies maximum electrical power to the light emitting devices (as recited in Claim 20), column 2, lines 14-17.**

12. Method Claim 80 was considered as inherently disclosed by the patented structure of WILLIAMS (as detailed above).

13. The applicant is advised that the use of phrases like "configure to", "simulates a desired spectrum corresponding to sample radiation generated by a predetermined light source", and functional limitations was little or no patentable weight. See previous Section 9.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 4, 6-8, 10-14, 16-18, 23-27, 36, 37, 39-64, 68-78, 81-98 and 102-113 are rejected under 35 U.S.C. 103(a) as being unpatentable over WILLIAMS (U.S. Pat. 2,686,866).

15. WILLIAMS discloses an illumination device having:

- **a plurality of light emitting devices (as recited in claims 1 and 15), Figure 1, reference characters R and B;**
- **the plurality of light emitting devices including at least one first light emitting device configured to emit a first radiation having a first spectrum (as recited in claims 1 and 15), Figure 1, reference character R;**
- **the plurality of light emitting devices further including at least one second light emitting device configured to emit a second radiation having a second spectrum (as recited in claims 1 and 15), Figure 1, reference character B;**
- **the second spectrum being different from the first spectrum (as recited in claims 1 and 15), column 3, lines 36-44;**

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- **a controller (as recited in claims 1, 15 and 36), column 1, line 34-36;**
- **the controller being configured to control the plurality of light emitting devices to produced a composite radiation (as recited in claims 1, 15 and 36), column 1, lines 34-36;**
- **the composite radiation having at least one resulting spectrum that simulates a desired spectrum corresponding to sample radiation from a predetermined light source (as recited in Claim 1), inherent;**
- **the light emitting devices being free of a filter 9as recited in Claim 43), column 3, lines 44-46;**
- **the desired radiation having a color temperature (as recited in Claim 53), inherent;**
- **the controller configured to control at least one of the first and second intensity based on a predetermined color temperature (as recited in Claim 54), as evidenced by column 1, lines 30-36;**
- **at least one of the first and second spectrum being selected based at least in part on the predetermined color temperature (as recited in Claim 55), as evidenced by column 1, lines 30-36;**
- **the controller being configured to control at least one of a first intensity of the first radiation and the second intensity of the second radiation based at least in part on the desired color**

- temperature (as recited in claims 56 and 58), as evidenced by column 1, lines 30-36;**
- **a number of at least one of the first and second light emitting devices being selected base at least in part on the desired color temperature (as recited in claims 57 and 59), as evidenced by column 1, lines 30-36;**
 - **the plurality of light emitting devices further including at least one third light emitting device configured to emit a third radiation having a third spectrum (as recited in claims 60 and 74), Figure 2, reference character G;**
 - **at least one of the light emitting devices being a white light emitting device (as recited in claims 62 and 76), Figure 2, reference character W;**
 - **the controller being configured to control the color temperature of the composite radiation (as recited in Claim 68), as evidenced by column 1, lines 30-36;**
 - **the controller being configured to control the color temperature and intensity of the composite radiation (as recited in Claim 71), as evidenced by column 1, lines 30-36;**
 - **the controller having an user interface (as recited in Claim 72), inherent;**

- **the controller and user interface being configured to facilitate simultaneous control of both the color temperature and intensity of the composite radiation (as recited in Claim 73), inherent.**

16. WILLIAMS discloses all the limitations of the claims, except:

- the predetermined light source being at least one of a incandescent lamp, a fluorescent lamp, a halogen lamp, ambient outdoor daylight, cloudy conditions of ambient outdoor daylight, sunny conditions of ambient outdoor daylight, sunrise, sunset, and one or more substantially white light sources (as recited in claims 4, 16 and 44-52);
- the illumination device including at least five different light sources each having a different spectra (as recited in claims 6 and 36);
- the illumination device including at least eight different light sources each having a different spectra (as recited in claims 7, 37 and 42);
- the light emitting devices being light emitting diodes (as recited in claims 8, 23 and 76)
- the resulting spectrum having a normalized deviation across the visible spectrum of less than about 25% relative to the desired spectrum (as recited in Claim 10);

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- the resulting spectrum having a normalized deviation across the visible spectrum of less than about 25% relative to the desired spectrum (as recited in Claim 11);
- the resulting spectrum and the desired spectrum being within 5 db of each other across the visible spectrum when the controller supplied maximum electrical power to the light emitting devices (as recited in claims 12 and 26);
- the first and second spectrums having a spectral half-width of less than about 40nm (as recited in claims 13, 14, 24, 39 and 41);
- the peak wavelength of the first spectrum being spaced less than about 50 nm from the peak wavelength of the second spectrum (as recited in claims 14, 24, 39 and 41);
- the resulting spectrum having a normalized mean deviation across the visible spectrum of less than about 30% relative to the desired spectrum (as recited in claims 17, 18 and 43);
- the resulting spectrum including wavelengths only within a contiguous bandwidth of less than 200 nm (as recited in Claim 25);
- no portion of the resulting spectrum having a relative power more than 2 db lower than another portion of the resulting spectrum (as recited in Claim 27);
- the illumination device including at least nine different light sources each having a different spectra (as recited in claims 61 and 75);

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- at least one of the light emitting devices being a white light emitting device (as recited in claims 62 and 76);
- the controller configured to vary the color temperature of the composite radiation within the range of approximately 500 K to 10,000 K (as recited in Claim 69); and
- the controller configured to vary the color temperature of the composite radiation within the range of approximately 2,300 K to 4,500 K (as recited in Claim 70).

17. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the illumination device of WILLIAM to produced the claimed composite radiation spectrums (as recited in claims 4, 10, 12-14, 16-18, 24-27, 41, 44-52, 69 and 70), since WILLIAMS specifically states the patented invention as being directed to providing illumination which can be blended to obtain illumination of any desired composite spectrum (see column 1, lines 1-36).

18. The examiner takes Official Notice that the use of LEDs is old and well known in the illumination art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute an LED for the light sources in the system of WILLIAMS. One would have been motivated since LEDs are recognized in the illumination art to have many desirable advantages, including reduced size, high efficiency, low power consumption, long life, resistance to vibrations, and low heat production, over other light sources.

19. Regarding including 5, 8 or 9 light emitting devices(as recited in claims 6, 7, 75 and 95), it would have been obvious to one of ordinary skill in the art at the time the invention was made to include any given number of light sources as necessitated by the particular requirements of a specific application, as suggested by WILLIAMS in column 1, lines 26-30. In addition, the applicant is advised that it has been held that mere duplication of essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

20. Method claims 81-98 and 102-113 were considered as inherently disclosed, or suggested, by the patented structure of WILLIAMS (as detailed above).

21. Claims 4, 6, 7, 10-14, 16-18, 24-27, 36, 37, 39-64, 68-78, 81-98 are rejected under 35 U.S.C. 103(a) as being unpatentable over BOENNING et al. (U.S. Pat. 3,760,174).

22. BOENNING et al. discloses an illumination device having:

- **a plurality of light emitting devices (as recited in claims 1 and 15), Figure 2, reference characters 21, 24 and 25;**
- **the plurality of light emitting devices including at least one first light emitting device configured to emit a first radiation having a first spectrum (as recited in claims 1 and 15), Figure 2, reference character 21;**

- **the plurality of light emitting devices further including at least one second light emitting device configured to emit a second radiation having a second spectrum (as recited in claims 1 and 15), Figure 2, reference character 24;**
- **the second spectrum being different from the first spectrum (as recited in claims 1 and 15), column 2, lines 14-17;**
- **a controller (as recited in claims 1, 15 and 36), Figure 2, reference characters 13 and 15 ;**
- **the controller being configured to control the plurality of light emitting devices to produced a composite radiation (as recited in claims 1, 15 and 36), column 2, lines 23-33;**
- **the composite radiation having at least one resulting spectrum that simulates a desired spectrum corresponding to sample radiation from a predetermined light source (as recited in Claim 1), inherent;**
- **the desired radiation having a color temperature (as recited in Claim 53), inherent;**
- **the controller configured to control at least one of the first and second intensity based on a predetermined color temperature (as recited in Claim 54), as evidenced by Figure 2;**

- **at least one of the first and second spectrum being selected based at least in part on the predetermined color temperature (as recited in Claim 55), as evidenced by column 1, lines 44-59;**
- **the controller being configured to control at least one of a first intensity of the first radiation and the second intensity of the second radiation based at least in part on the desired color temperature (as recited in claims 56 and 58), as evidenced by Figure 2;**
- **a number of at least one of the first and second light emitting devices being selected base at least in part on the desired color temperature (as recited in claims 57 and 59), as evidenced by column 1, lines 44-59;**
- **the controller being configured to control the color temperature of the composite radiation (as recited in Claim 68), as evidenced by Figure 2;**
- **the controller being configured to control the color temperature and intensity of the composite radiation (as recited in Claim 71), as evidenced by Figure 2;**
- **the controller having an user interface (as recited in Claim 72), inherent;**
- **the controller and user interface being configured to facilitate simultaneous control of both the color temperature and**

**intensity of the composite radiation (as recited in Claim 73),
inherent; and**

- **the plurality of light emitting devices further including at least one third light emitting device configured to emit a third radiation having a third spectrum (as recited in claims 60 and 74), Figure 2, reference character 25.**

23. BOENNING et al. discloses all the limitations of the claims, except:

- the predetermined light source being at least one of a incandescent lamp, a fluorescent lamp, a halogen lamp, ambient outdoor daylight, cloudy conditions of ambient outdoor daylight, sunny conditions of ambient outdoor daylight, sunrise, sunset, and one or more substantially white light sources (as recited in claims 4, 16 and 44-52);
- the illumination device including at least five different light sources each having a different spectra (as recited in claims 6 and 36);
- the illumination device including at least eight different light sources each having a different spectra (as recited in claims 7, 37 and 42);
- the light emitting devices being light emitting diodes (as recited in claims 8, 23 and 76)
- the resulting spectrum having a normalized deviation across the visible spectrum of less than about 25% relative to the desired spectrum (as recited in Claim 10);

- the resulting spectrum having a normalized deviation across the visible spectrum of less than about 25% relative to the desired spectrum (as recited in Claim 11);
- the resulting spectrum and the desired spectrum being within 5 db of each other across the visible spectrum when the controller supplied maximum electrical power to the light emitting devices (as recited in claims 12 and 26);
- the first and second spectrums having a spectral half-width of less than about 40nm (as recited in claims 13, 14, 24, 39 and 41);
- the peak wavelength of the first spectrum being spaced less than about 50 nm from the peak wavelength of the second spectrum (as recited in claims 14, 24, 39 and 41);
- the resulting spectrum having a normalized mean deviation across the visible spectrum of less than about 30% relative to the desired spectrum (as recited in claims 17, 18 and 43);
- the resulting spectrum including wavelengths only within a contiguous bandwidth of less than 200 nm (as recited in Claim 25);
- no portion of the resulting spectrum having a relative power more than 2 db lower than another portion of the resulting spectrum (as recited in Claim 27);
- the illumination device including at least nine different light sources each having a different spectra (as recited in claims 61 and 75);

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- at least one of the light emitting devices being a white light emitting device (as recited in claims 62 and 76);
- the controller configured to vary the color temperature of the composite radiation within the range of approximately 500 K to 10,000 K (as recited in Claim 69); and
- the controller configured to vary the color temperature of the composite radiation within the range of approximately 2,300 K to 4,500 K (as recited in Claim 70).

24. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the illumination device of BOENNING et al. to produced the claimed composite radiation spectrums (as recited in claims 4, 10, 12-14, 16-18, 24-27, 41, 44-52, 69 and 70), since BOENNING et al. specifically states the patented invention as being directed to providing illumination of any selected spectrum within the ICI chromaticity area enclosed by the light emitting devices spectrum (see column 2 and 3, lines 49-68 and 1-12, respectively).

25. Regarding including 5, 8 or 9 light emitting devices (as recited in claims 6, 7, 75 and 95), it would have been obvious to one of ordinary skill in the art at the time the invention was made to include any given number of light sources as necessitated by the particular requirements of a specific application, as suggested by BOENNING et al. (see column 3, lines 3-26). In addition, the applicant is advised that it has been held that

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mere duplication of essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

26. Method claims 81-98 and 102-113 were considered as inherently disclosed, or suggested, by the patented structure of BOENNING et al. (as detailed above).

Relevant Prior Art

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gamain (U.S. Pat. 3,093,319), **Way** (U.S. Pat. 3,143,300), **Blakeslee** (U.S. Pat. 3,564,332), **Weiss et al.** (U.S. Pat. 4,071,809), **Havel** (U.S. Pat. 4,810,937), **Mc Ewan et al.** (U.S. Pat. 5,036,248), **Clark** (U.S. Pat. 5,255,171), **Rosset** (U.S. Pat. 5,597,231) and **Gismondi** (U.S. Pat. 5,961,201) disclose illumination devices including a plurality of independently controlled light sources, the light sources being of a plurality of colors. The illumination device emits composite illumination capable of reproducing a plurality of different colors and intensities.

Allowable Subject Matter

28. Claims 28-35 are allowed.

29. Claims 21, 38, 65-67, 79 and 99-101 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

30. The following is a statement of reasons for the indication of allowable subject matter:

Applicant teaches an illumination device having plurality of groups of light-emitting devices, at least one first group of light emitting devices being for emitting a first spectrum of light and a second group being for emitting a second spectrum different from the first one. Each group includes different quantities of devices. A controller drives each group to produce a composite spectrum, such composite spectrum simulating the spectrum of a predetermined light source. In addition, a sensor is used to monitor the composite spectrum or the spectrum of the predetermined light source, the controller controlling the plurality of illumination devices based on the sensor output.

No prior art was found teaching individually, or suggesting in combination, all of the features of the applicants' invention, specifically the groups including different quantities of devices, and the controller controlling the plurality of illumination devices based on the sensor output, in combination with the recited structural limitations of the claimed invention.

Response to Arguments

31. Applicant's arguments filed June 20, 2005 regarding the drawing objections have been fully considered, but they are not persuasive.

As indicated in previous section 4, no single reference character shall be used for two different parts or for a given part and a modification of such part. In the instant specification, for example, reference number "368" is first used to designate a "conductive sleeve" in page 17 (line 5) and later used to designate a "conductive aluminum sleeve" in page 18 (line 6). As the applicant will surely agree, a conductive aluminum sleeve is merely one of the many conductive sleeves included by the recitation "conductive sleeve", and as such it is a modification of the original conductive sleeve.

The Examiner respectfully suggest amending the specification to use the most restrictive element designations (e.g. conductive aluminum sleeve) first in the description.


32. Regarding the Examiner's rejection of claims 1-5, 8-26, 28-35 and 41-43 under 35 U.S.C. 103(a) as unpatentable over AMERSON et al. (U.S. Pat. 6,379,022), the applicant argues that the cited reference (filed April 25, 2000) is not prior art to the instant application based on its earliest effective filing date (Provisional App. No. 60/166,533 filed November 18, 1999). This argument was considered meritorious. Rejections base on newly found art are presented in this Office Action.

Conclusion

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ismael Negron whose telephone number is (571) 272-2376. The examiner can normally be reached on Monday-Friday from 9:00 A.M. to 6:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra L. O'Shea, can be reached on (571) 272-2378. The facsimile machine number for the Art Group is (703) 872-9306.

34. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications maybe obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, go to <http://pair-direct.uspto.gov>. Should you have questions on access to Private PAIR system, contact the Electronic Business Center (EBC) toll-free at 866-217-9197.



THOMAS M. SEMBER
PRIMARY EXAMINER

Inr

October 3, 2005